

Laconia, Harrison Co.: the first soaking rain since the 9th of June fell on the 26th, 27th, and 28th, breaking the drought and putting the soil in tillable condition.

Iowa.—The following is from "The Daily Gate City" of the 24th, published at Keokuk, Iowa:

Many of the interior towns in Iowa, Missouri, and Illinois are suffering the inconveniences of an inadequate water supply, the continued prevalence of the drought having dried up the creeks and wells, which were partially replenished by the rains of several weeks ago. At that time there had been no rain for six or seven weeks and water was at a decided premium. Crops were damaged, the meadows parched by the sun, and live stock was suffering. Relief was afforded for a short time when the supply again became almost exhausted. The creeks and small streams in southwestern Iowa are nearly dry, and unless there is a rainfall soon people in interior towns will actually suffer. At Pella, on the Rock Island Road, the supply is nearly gone, and water is hauled on the trains from Keokuk. Within a radius of ten miles of Keokuk the supply is short in some localities and live stock is not provided with what it needs.

Fort Madison, Lee Co., 30th: the month has been unusually dry; farmers have had to stop ploughing on account of the dry condition of the soil, and in some places wheat had to be sown the second time. The rain of the 22d moistened the ground sufficiently to permit the resumption of ploughing. At the end of the month the fall wheat was coming up and looking well.

Cedar Rapids, Linn Co., 30th: the water in the Cedar River is still at a very low stage, having risen but little during the month.

Kansas.—Winfield, Cowley Co., 23d: the recent rains have greatly improved vegetation in this part of the state.

Kentucky.—Versailles, Woodford Co., 20th: heavy rains fell during the night of the 17-18th; this put the ground in fair condition for ploughing, but it was not sufficient to replenish the water supply, and farmers are still driving stock long distances for water.

Louisville: the heavy rain which fell throughout the 27th practically ended the drought; it came too late, however, to be of any material good to the crops, but it will renew the supply of water in wells and springs that have been dry for a long time.

Michigan.—Mottville, Saint Joseph Co., 30th: owing to the dry weather the streams are low and wells are failing.

New York.—Lockport, Niagara Co., 11th: reports from Orleans county state that on account of dry weather the potato crop is a failure. Rain is much needed to enable farmers to prepare for seeding fall wheat.

Mississippi.—University, Lafayette Co.: reports from various sections in the state on the 10th showed that drought was general throughout the state and that the cotton crop was suffering seriously. The heavy rain which fell during the

night of the 21st-22d was of great benefit, as the cisterns had run dry and water for stock was becoming scarce; it was also of great benefit to growing crops. Another heavy fall of rain occurred on the 24th, terminating the drought in this vicinity.

Vicksburg, 15th: light rain fell at intervals during the afternoon and evening; this rain ended the drought which had prevailed in this vicinity during the last twenty-eight days.

Missouri.—Fayette, Howard Co.: very little rain fell during the month until the last decade, when steady rains fell to the amount of 3.02 inches, which soaked the ground thoroughly and were of much benefit to pastures and seeding.

Ohio.—Napoleon, Henry Co., 24th: the Maumee River at this point is lower than it has been for the last twenty-five years; streams, wells, and many cisterns are dry.

Wauseon, Fulton Co., 30th: the drought in this locality is not yet entirely broken; the ground has been so dry that the seeding of wheat has been much retarded.

Pennsylvania.—Quakertown, Bucks Co., 1st: ploughing for fall seeding is difficult on account of the surface of the ground being very dry.

Tennessee.—Nashville: the drought of the past two months was broken by the rains on the 17th and 18th. Reports received on the 21st from neighboring counties showed that the heavy rains on the above dates did not extend beyond a radius of twelve miles from Nashville.

Chattanooga: the long continued drought in this section was broken by light rains from the 22d to the 28th.

Texas.—San Antonio, Bexar Co., 8th: reports from Frio county state that as a result of the protracted drought the people in the rural districts have been reduced to a state of destitution.

Vermont.—Newport, Orleans Co., 30th: the water in Lake Memphremagog is lower at this date than it has been at any time for many years; springs which have never been known to fail are now dry.

Virginia.—Rappahannock, Caroline Co., 30th: agricultural interests have been very much injured by the protracted drought in this section of the state; no measurable rain has fallen during the month. The Rappahannock River is unusually low, and nearly all smaller streams and springs are dry.

University of Virginia, Albemarle Co., 30th: on account of the protracted drought the ground is too hard for ploughing, and no grain has been sown in consequence; only 0.31 inch of rain fell from August 25th to September 26th.

West Virginia.—Middlebrook, Randolph Co., 30th: the rains from the 27th to the 29th ended the long and severe drought in this locality; the crops are light in many places, but throughout the mountain districts they gave a fair yield.

WINDS.

The most frequent directions of the wind during September, 1887, are shown on chart ii, by arrows flying with the wind. In the upper Mississippi and Missouri valleys, South Atlantic and-east Gulf states the prevailing directions are mostly from the east, southeast, or south; in New England and at stations along Lakes Erie and Ontario they are generally southwest or west; in the Ohio Valley and middle Atlantic states, north and northeast; in the upper lake region and at Rocky Mountain stations, variable; on the Pacific coast, north, northwest, or west.

HIGH WINDS (in miles per hour).

The maximum velocities of the wind for September, 1887, at Signal Service stations where the movements are registered, are given in the table of miscellaneous meteorological data. No velocities of fifty or more miles per hour, other than those given in the table referred to, occurred during the month, with the exception of Brownsville, Tex., 60 miles, se., on the 22d; and Mount Washington, N. H., where velocities exceeding fifty miles were frequent; besides the maximum velocity of 82 miles,

sw., on the 7th, at the latter station, there were recorded the following: 81 miles, nw., 8th; 78, nw., 21st; and 79, nw., 22d.

LOCAL STORMS.

Genoa, Nance Co., Nebr.: the heavy rains accompanying the unusually severe storm which occurred on the 4th resulted in much damage to crops in the lowlands; nearly all bridges in this vicinity were washed away.

Key West, Fla.: high northeasterly winds prevailed on the 1st and 2d; on the latter date a maximum velocity of forty-two miles per hour was recorded.

Saint Vincent, Minn.: a severe thunder-storm occurred during the forenoon of the 4th; high winds prevailed from 1.45 to 8.30 p. m.; the maximum velocity, thirty miles per hour from the south, occurred at 8.15 p. m.

Palmyra, Jefferson Co., Wis.: during the evening of the 4th this section was visited by a severe storm of rain and hail, the latter causing serious injury to the tobacco crop.

Sioux Falls, Minnehaha Co., Dak.: an unusually heavy rain storm, accompanied by intense electrical discharges, prevailed

in this vicinity on the afternoon of the 4th and during the night following.

Bismarek, Dak.: during the thunder-storm which began at 10 a. m. and ended at 1 p. m. on the 5th, heavy rain and hail fell from 11.15 to 11.39 a. m. The wind attained a maximum velocity of thirty-one miles per hour from the northwest.

Toledo, Ohio: during the afternoon of the 6th a tornado apparently started near Adrian, Lenawee Co., Mich., and passed southeastward into this (Lucas) county. A large brick school house four miles south of Adrian was demolished. At Sylvania, about eighteen miles northwest of Toledo, buildings were damaged, and all telegraph wires between Adrian and Sylvania were blown down, completely cutting off communication. The buildings of the Northwestern Insane Asylum, near Toledo, were damaged to a considerable extent. From the vicinity of Toledo the track of the tornado, which was from one hundred to two hundred yards in width, was south by east along the line of the Toledo and Ohio Central Railroad. No fencing or tall trees were left standing in this track, and dwellings and barns were unroofed. At Waterville, Lucas Co., and other villages to the southward, much damage was done.

Tiffin, Seneca Co., Ohio: a severe storm occurred on the night of the 6-7th, during which trees, etc., were blown down.

Findlay, Hancock Co., Ohio: at 3 a. m. on the 7th the La-Grange rolling mills and Moore's cable chain works, situated west of the city, were completely wrecked by a tornado. A number of other buildings were blown from their foundations.

Albany N. Y.: during the afternoon of the 7th a severe storm, accompanied by hail, occurred at this place; the hail-stones, which measured half an inch in diameter, caused considerable damage to buildings and vegetation. The most violent part of the storm was of about thirty minutes' duration—from 2.30 to 3 p. m.

Saratoga Springs, Saratoga Co., N. Y.: a thunder and hail storm began at 1.30 and ended at 1.50 p. m. on the 7th; the hail-stones measured three-quarters of an inch in diameter, and caused much damage to windows and sky-lights; about 1,000 panes of glass were broken in a hot-house near this place. The storm's track was from about one-half to three-quarters of a mile wide.

Medina, Orleans Co., N. Y.: a large amount of damage was done to crops in this county by the storm on the night of the 7-8th. It is estimated that \$60,000 will not cover the losses sustained.

Fort Maginnis, Mont., 12th: it is reported that on account of the recent heavy rains, the grain and hay crops in this county have been damaged about fifty per cent.

Denver, Colo.: high winds prevailed from 12 m. until 8.40 p. m. on the 12th; a maximum velocity of forty-two miles an hour occurred at 2.10 p. m.

Topeka, Kans.: a high wind, velocity ranging from forty to forty-five miles per hour, prevailed for several hours on the 12th, causing some damage to shade trees.

West Monroe, Oswego Co., N. Y.: a severe thunder-storm occurred during the night of the 13-14th; a number of barns and other buildings were struck by lightning and burned.

Titusville, Fla.: during the afternoon of the 16th the wind, which had been fresh northeasterly, suddenly increased in force at 2.20 p. m., reaching a velocity of forty-two miles per hour; this high wind continued until 2.45 p. m.

Keeler, Cal.: the heavy rain and thunder-storm on the 22d was one of the severest that has ever visited this county. Hail fell for about fifteen minutes, some of the hail-stones being as large as walnuts. A washout occurred on the railroad two miles northwest of this place.

Hatteras, N. C.: high wind prevailed during the afternoon of the 23d, reaching a maximum velocity of forty-six miles per hour from the north at 7.30 p. m.

Chicamiconico, N. C.: during a northeasterly gale on the 23d the schooner "Charles," from Beaufort, N. C., was driven ashore near Oregon Inlet.

Brownsville, Tex.: a thunder-storm passed over this place from the northwest at 7 p. m. on the 26th; the heavy rain which fell between 9.30 and 10 p. m. caused the Rio Grande River to overflow adjacent lowlands.

Amesbury, Essex Co., Mass.: the thunder-storm on the night of the 7-8th was of unusual severity in this vicinity; numerous buildings and other objects were struck by lightning. Reports from Bridgewater, Plymouth Co., state that a severe storm occurred at that place during the afternoon of the 7th, and that considerable damage was done by lightning.

WATER-SPOUTS.

Captain Mackay, of the s. s. "Alvena," reports: "September 18th, 11 p. m. Greenwich time, in N. 18° 30', W. 74° 08' (Hayti), with light variable winds; a heavy cloud appeared about four miles out at sea, extending towards Caymite Island, from which were seen seven water-spouts, one being very large and drawing up large quantities of water."

COTTON REGION REPORTS.

In the following table are given the means of the maximum and minimum temperatures, and the average rainfall for the cotton-belt districts during the month. For the purpose of comparison the means for the five preceding years are also given.

A slight excess over the average rainfall occurs in the districts of New Orleans, Atlanta, Montgomery, and Mobile; elsewhere the deficiencies occur, those for the districts of Savannah and Charleston exceeding two inches.

The temperature, as compared with the average, shows departures both above and below the normal, though generally slight.

Temperature and rainfall data for the cotton districts, September.

Districts.	Rainfall.			Temperature.								Extremes for Sept., 1887.	
	Average for Sept. of five preceding years.	Average for Sept., 1887.	Departures.	Maximum.			Minimum.						
				Mean for Sept. of five preceding years.	Mean for Sept., 1887.	Departures.	Mean for Sept. of five preceding years.	Mean for Sept., 1887.	Departures.				
										Max.	Min.		
New Orleans.....	Inch. 3.16	Inch. 3.66	+ 0.50	87.5	87.4	- 0.1	66.8	65.6	- 1.2	99	46		
Savannah.....	3.76	1.73	- 2.03	86.0	86.9	+ 0.9	67.5	64.2	- 3.3	101	41		
Charleston.....	4.08	0.96	- 3.12	84.7	84.5	- 0.2	64.0	62.1	- 1.9	101	36		
Atlanta.....	2.62	2.95	+ 0.33	83.9	83.5	- 0.4	63.2	61.4	- 1.8	97	38		
Wilmington.....	4.32	1.48	- 2.84	82.6	85.8	+ 3.2	62.2	59.4	- 2.8	101	35		
Memphis.....	2.52	2.28	- 0.24	84.7	85.8	+ 1.1	61.2	61.9	+ 0.7	100	38		
Galveston.....	4.23	3.05	- 1.18	87.8	88.0	+ 0.2	66.4	68.0	+ 1.6	100	39		
Vicksburg.....	3.60	3.31	- 0.29	87.5	88.1	+ 0.6	65.2	67.9	+ 2.7	100	35		
Montgomery.....	1.77	2.73	+ 0.96	86.4	85.3	- 1.1	64.1	63.4	- 0.7	99	38		
Augusta.....	2.86	1.19	- 1.67	85.0	84.5	- 0.5	65.3	63.0	- 2.3	101	35		
Little Rock.....	2.64	1.15	- 1.49	86.2	87.5	+ 1.3	60.3	60.8	+ 0.5	101	36		
Mobile.....	1.95	2.69	+ 0.74	88.2	89.1	+ 0.9	65.1	60.4	- 4.7	105	32		

INLAND NAVIGATION.

STAGE OF WATER IN RIVERS AND HARBORS.

Fort Buford, Dak., 25th: the Missouri River has been falling since the 4th, and navigation at this time is seriously impeded on account of low water.

Shreveport, La.: navigation on the Red River was suspended on account of low water on the 1st; by the 29th the river had risen sufficiently to permit the resumption of navigation.

Louisville, Ky., 19th: the present low stage of water in the Ohio River is almost without precedent, and navigation is only practicable for boats of light draught.

In the following table are shown the danger-points at the various river stations and the highest and lowest depths for September, 1887, with the dates of occurrence, and the monthly ranges: